

Conference or Workshop Item

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***Harmonia axyridis* implicated in native European ladybird declines**

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Rates of global extinction are orders of magnitude higher than historical estimates and show no sign of slowing. The Convention on Biological Diversity and the 10th Conference of the Parties (Nagoya in 2010), identified invasive alien species (IAS) as one of five major pressures driving biodiversity loss, and ultimately extinction of species. However, there are few examples of causal relationships between IAS and species declines. IAS afford a unique opportunity to accurately assess threats to biodiversity because the time at which an IAS arrives within an ecosystem is often known, unlike other drivers of change. We examined trends in distribution of native ladybirds from large-scale and long-term annual citizen-science surveys before and after the arrival of the predatory harlequin (or Asian) ladybird

Harmonia axyridis, an IAS that is rapidly expanding across North America and Europe. We report rapid, dramatic and ongoing declines in the distribution of formerly common and widespread native ladybirds in direct response to the arrival of *H. axyridis* in Belgium and Britain. The dramatic decline of *A. bipunctata* over the five years following the arrival of *H. axyridis* is of particular note. Trends in ladybird abundance revealed similar patterns of declines in ladybirds across Belgium, Britain and Switzerland. Together, these parallel analyses show *H. axyridis* to be displacing native ladybirds with a high niche overlap, probably through predation and competition. Such rapid biotic homogenisation at the continental scale could impact on the resilience of ecosystems and severely diminish the services they deliver.